marised recommendations on appropriate evidence sources for different model parameters in a narrative manner. Additionally, information on advantages and disadvantages of sources, on evidence identification methods and on data quality issues was extracted. **RESULTS:** Twenty-eight documents fulfilled our inclusion criteria. We identified a large variety of evidence sources for informing model parameters on clinical effect size, natural history of disease, resource use, unit costs and health state utility values. They comprise research and non-research based sources. The documents do not provide structured advice on the hierarchy of evidence and on the limitations of evidence sources. The information is presented fragmentarily and is not tailored to specific model types. **CONCLUSIONS:** The usability of guidelines and manuals for modelling could be improved by addressing the issue of appropriate evidence sources in a more structured and comprehensive format.

PRM96

MODELLING UNCERTAIN FUTURE EVENTS IN COST-EFFECTIVENESS ANALYSIS

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OBJECTIVES: When the appropriate time horizon exceeds the evidence time horizon in a cost-effectiveness decision model, numerous uncertainties arise. One potential source of uncertainty is that of a possible future event that may affect one or more model parameters, e.g. a price shock or the emergence of a new comparator. These uncertain future events (UFEs) are rarely accounted for in health technology assessment and there is a dearth of guidance regarding how they should be modelled. The objective of this study is to describe the circumstances under which UFEs could meaningfully impact cost-effectiveness estimates and to explore and demonstrate appropriate modelling techniques using a motivating example. **METHODS:** Drawing on examples from HTA and other relevant literature, a framework is proposed to outline: when to take explicit account of uncertain future events for the purposes of reimbursement decisions, how different future events may affect value-of-information analysis and what modelling methods are likely to be useful when incorporating UFEs. Taking the example of a decision model seeking to estimate the cost-effectiveness of an early interventional strategy for patients with non-ST-elevation acute coronary syndrome, a future price change is simulated and the framework is applied. **RESULTS:** UFEs are shown to impact 'accept or reject' reimbursement decisions only in very specific circumstances where there is the potential to incur irrecoverable costs, whereas their role in value-of-information analysis is invariable. The applied example shows that the reimbursement recommendation for future populations may change with the occurrence of the future event and that there is value in reducing the uncertainty regarding the nature of the future event. **CONCLUSIONS:** UFEs will only impact expected costs-effectiveness sunder specific and rare circumstances. When it is appropriate to include a future event in a decision model, the uncertainty surrounding its likelihood, timing and magnitude should also be quantified.

PRM97

TECHNICAL ERRORS IN COST-EFFECTIVENESS MODELS: EVIDENCE FROM THE SINGLE TECHNOLOGY APPRAISAL PROGRAMME IN ENGLAND AND WALES

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OBJECTIVES: Modelling for cost-effectiveness studies often relies upon the use of spreadsheets. However, research has shown that approximately 90% of spreadsheets contain technical errors. Furthermore, cost-effectiveness models rely on accurate transcription between many data sources, which increases the risk of errors further. The objective of this analysis was to ascertain the incidence of reported technical errors in cost-effectiveness models submitted to NICE as part of the Single Technology Assessment (STA) programme, which are subject to rigorous assessment by Evidence Review Groups (ERGs). **METHODS:** NICE guidance documents were searched for a wide range of technical error types using the HTAinsite database. Reports were included if the ERG had identified technical errors in the manufacturer's submission and this had been noted at committee level. Included appraisals were analysed to identify categories of errors identified. **RESULTS:** Of the 102 completed STA Guidance documents searched, 39 appraisals met the inclusion criteria of the study, representing a technical error incidence of 38.2% (95% CI: 28.8 – 48.4%). Within these studies, 47 errors were identified in the following areas: computation (47%), logic (17%), transcription (13%) and data handling (9%). Error causes could not be determined in 15% of cases. The magnitude of effect caused by technical errors was difficult to determine, because corrected models often include additional changes to parameters or model structure. **CONCLUSIONS:** The incidence of technical errors identified in the STA programme was lower than has previously been observed in studies of spreadsheet validity although this analysis assumes that ERG groups will identify all technical errors. The true incidence of errors may be higher than reported by this analysis. Use of best-practice methods and increased awareness of the causes and identification of technical errors may help to reduce their pervasiveness.

PRM98

THERAPY ESCALATION THRESHOLDS AND THE POTENTIAL FOR BIASED COST EFFECTIVENESS ANALYSIS WHEN FAILING TO SAMPLE BASELINE HBA1C IN TYPE 2 DIABETES

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OBJECTIVES: Due to the progressive nature of type 2 diabetes mellitus (T2DM), patients inevitably require therapy escalation or intensification. In health economic analyses, sampling input parameters is routinely undertaken for probabilistic analysis but non-sampled analysis (mean values) is still commonplace. The objective of this study was to assess how sampling baseline HbA1c in combination with therapy escalation thresholds influences predicted costs and quality adjusted life expectancy (QALE) in T2DM economic evaluations. **METHODS:** This study used the IMS Core Diabetes Model (CDM), a validated and established diabetes model, to evaluate the cost effectiveness of metformin+ sulphonylurea (M+S) compared to metformin + DPP-4 (M+D). Baseline HbA1c was set to 8.0% (non-sampled scenario) with standard error of 0.8 (sampled scenario). Efficacy data for dual therapy was sourced from a published systematic review; HbA1c and BMI changes of -0.8% and 0.199kg/m^2 (M+D) and -0.79% and 0.707kg/m^2 (M+S) respectively were applied. Insulin rescue therapy was applied to both arms at HbA1c thresholds of 6.5%, 7.0% 7.5%. The model was run over a lifetime and costs (US$) and benefits were discounted at 3.5%. **RESULTS:** Total incremental costs were $7,667, $9,571 and $11,644 for M+D versus M+S using sampled baseline HbA1c for therapy escalation thresholds of 6.5%, 7.0% 7.5% respectively; and were $5,258, $2311 and $206 lower using non-sampled values, respectively. A similar pattern was observed for QALE, in which incremental QALE gains were 85%, 42% and 1% lower with non-sampled compared to sampled baseline HbA1c for escalation thresholds of 6.5%, 7.0% 7.5% respectively. **CONCLUSIONS:** The importance of probabilistic analysis within cost effectiveness models extends beyond quantifying the effects of parameter uncertainty. When treatment decision rules are dependent on patient attributes that are subject to variability (such as HbA1c) then failing to accommodate this within the model can significantly bias predicted costs and QALE.

PRM99

MARKOV MODELS IN NON METASTATIC PROSTATE CANCER – AVAILABILITY OF INPUT FACTORS AND STRUCTURURAL UNCERTAINTY

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OBJECTIVES: This study aims at reviewing structural differences in Markov Models comparing different treatment strategies for Non-Metastatic Prostate Cancer related to scope, time-horizon, perspective, assumptions and the selection of parameters for the model. **METHODS:** There is an abundant literature on Prostate Cancer. There are however few well performed RCT's comparing different options for management for NMPCa.[1] Due to the lack of conclusive clinical evidence on the best treatment for localised prostate there has been a considerable interest in the modelling of prostate cancer in decision analytic models and economic evaluation.[2] The literature review in this paper focuses on the limited number of papers on economic evaluation related to the condition. In addition there are several articles presenting Markov Models. The evaluation was based on selected items from "Consolidated Health Economic Evaluation Reporting Standards (CHEERS)". **RESULTS:** In NMPCa there are Markov models ranging from two to five health states [9]. The choice of model originates from the underlying assumptions, the aim/scope of the study or the availability of data to feed into the model. The insufficient clinical evidence and few preference based studies of health state values where the most influential elements in structuring the models Little attention is paid to the structural differences in the analysis and the discussions in the available papers. Structural uncertainty is viewed as external to the model and difficult to evaluate unless the structural choices are made transparent.[10]. **CONCLUSIONS:** Models in NMPCa differ in complexity and structure. The ability to evaluate the use of different models is highly dependent on transparency in the different building blocks. The CHEERS framework provided a useful tool in the evaluation input factors and the different Markov Model structures,

PRM100

BAYESIAN EVIDENCE SYNTHESIS OF SAFETY DATA: A ROBUST OPTION?

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OBJECTIVES: Particularly in the context of HTA evaluations where both post-marketing and pre-marketing data may be considered, the evidence to be synthesized can be sparse, partial and heterogeneous for safety outcomes. The Bayesian option has increasingly appeared as an unrivalled option for such challenging evidence synthesis cases but implementation in practice may be questioned. This work aims at determining how Bayesian meta-analysis or mixed treatment comparison of safety data can be optimized especially regarding the choice of prior distributions and model parameterization. **METHODS:** Based on the latest developments from the DIA working group on Bayesian methods for safety data applied to specific real-world cases of both direct meta-analysis and mixed treatment comparisons (MTC), different model parameterizations and different forms of informative and non-informative prior distributions are tested, with various weights allocated to the clinical data vs. the observational information. **RESULTS:** As opposed to the NICE parameterization of network meta-analysis, the 2-way predictor parameterization of MTC as proposed by the DIA working group provides more robust analysis based on non-informative priors. In the case of informative prior results, the most robust option was seen for equal total weight of clinical vs. observational data. Results of all meta-analyses appeared to be consistent across different model and prior specifications, even with low number of studies (<10). **CONCLUSIONS:** Bayesian evidence synthesis can leverage all available information in a robust manner for both direct and indirect comparisons, with fair quantification of uncertainty. Specific guidance on MTC model parameterization for safety data could complement the current NICE guidelines.

PRM101

THE ROLE OF HALF-CYCLE CORRECTION IN THE MODELS USED FOR HEALTH TECHNOLOGY ASSESSMENT

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OBJECTIVES: To analyse the half-cycle correction and its effect on the final results of Markov models. **METHODS:** In our analysis we focus on the half-cycle correction, which is a method used to deal with the inaccuracy caused by inadequate cycle